



## Relationship Between Anxiety and Lower Urinary Tract Symptoms

### Alt Üriner Sistem Semptomları ve Anksiyete Arasındaki İlişki

Anxiety and Lower Urinary Tract Symptoms

Rıza Cevik<sup>1</sup>, Ufuk Bal<sup>2</sup>, Sebahattin Albayrak<sup>3</sup>, Serhat Tanık<sup>3</sup>, Kursad Zengin<sup>3</sup>, Muhittin Atar<sup>3</sup>, Ali İrfan Gül<sup>4</sup>

<sup>1</sup>Department of Urology, Hıtit University, Training and Research Hospital, Çorum,

<sup>2</sup>Department of Psychiatry, Dr. Adnan Tok Ruh Sağlığı ve Hastalıkları Hastanesi, Adana,

<sup>3</sup>Department of Urology, Bozok University, School of Medicine, Yozgat,

<sup>4</sup>Department of Psychiatry, Bozok University, School of Medicine, Yozgat, Turkey

#### Özet

Giriş: Benign prostat hiperplazisi'ne (BPH) sekonder gelişen alt üriner sistem semptomları (AÜSS) yaygın ve yaşlı erkeklerin yaşam kalitesini etkileyen bir durumdur. Araştırmacılara göre AÜSS/BPH hastalarının önemli bir oranında (% 22,6) anksiyete veya depresyon rapor edilmiştir. Gereç ve Yöntem: Bor Devlet Hastanesi uroloji polikliniğine AÜSS ile başvuran ardışık 42 hasta muayene edildi ve maximum idrar akım hızı (Qmax), Uluslararası Prostat Sınam Skoru (IPSS) sonuçları kaydedildi. Ayrıca hastalarda IPSS yaşam kalite endeksi (QoL) ve anksiyete için Hamilton anksiyete değerlendirme ölçeği kullanıldı. Hastalar IPSS'ye göre iki gruba ayrıldı. Grup 1 orta (IPSS ≤19) ve grup 2 şiddetli (IPSS >19) AÜSS. Aynı şekilde hastalar Qmax'a göre iki gruba ayrıldı. Grup 3 orta (Qmax >9) ve grup 4 şiddetli (Qmax ≤9) AÜSS. Bulgular: Ortalama Hamilton anksiyete değerlendirme ölçeği puanı grup 1 ve 2'de sırasıyla  $15.4 \pm 3.3$  ve  $21.4 \pm 4.5$  ( $P=0.03$ ) idi. Grup 3 ve 4'te ise sırasıyla  $13.5 \pm 2.8$  ve  $17.9 \pm 3.5$  ( $P=0.04$ ) idi. Ortalama QoL endeksi puanı grup 1 ve 2'de sırasıyla  $3.2 \pm 0.6$  ve  $4.2 \pm 0.9$  ( $P=0.02$ ) idi. Grup 3 ve 4'te ise sırasıyla  $3 \pm 0.5$  ve  $3.7 \pm 0.6$  ( $P=0.02$ ) idi. Tartışma: Çalışmamızda BPH hastalarının kliniği ile anksiyete ve QoL arasındaki ilişki belirlendi. Bu psikiyatrik parametreler günlük rutin pratikte bireyler tedavi ve müdahalelerinin belirlenmesinde yardımcı olabilir.

#### Anahtar Kelimeler

Alt Üriner Sistem Semptomları; Anksiyete; Yaşam Kalitesi

#### Abstract

Aim: Lower urinary tract symptoms (LUTS) secondary to benign prostatic hyperplasia (BPH) are prevalent and interfere with the quality of life (QoL) of older men. According to observational, 22.6% of LUTS/BPH patients reported anxiety or depression. The aim of our study was to investigate the potential influences of anxiety and QoL to LUTS/BPH. Material and Method: We examined consecutive 42 patients admitted to our outpatient clinic with LUTS at Bor State Hospital. We examined and recorded maximum urinary flow rate (Qmax) and International Prostate Symptom Score (IPSS) also Hamilton anxiety rating scale for anxiety and IPSS QoL were utilized in the study. Patients according to IPSS were divided into two groups as moderate (group 1, IPSS ≤19) and severe (group 2, IPSS >19) LUTS. Patients according to Qmax were divided into two groups as moderate (group 3, Qmax >9) and severe (group 4, Qmax ≤9) LUTS. Results: The mean Hamilton anxiety rating scale score of group 1 and 2 were  $15.4 \pm 3.3$  and  $21.4 \pm 4.5$ , respectively ( $P=0.03$ ); of group 3 and 4 were  $13.5 \pm 2.8$  and  $17.9 \pm 3.5$ , respectively ( $P=0.04$ ). The mean QoL score of group 1 and 2 were  $3.2 \pm 0.6$  and  $4.2 \pm 0.9$ , respectively ( $P=0.02$ ); of group 3 and 4 were  $3 \pm 0.5$  and  $3.7 \pm 0.6$ , respectively ( $P=0.02$ ). Discussion: We found relationship between clinical status, anxiety and QoL in patients with BPH. These psychiatric parameters may help identify individuals to benefit from treatment interventions in daily routine practice.

#### Keywords

Lower Urinary Tract Symptoms; Anxiety; Quality of Life

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Corresponding Author: Sebahattin Albayrak, Department of Urology, Bozok University, School of Medicine, 66000, Yozgat, Turkey.

T.: +90 3542127060 F.: +90 3542177150 E-Mail: salbayrak77@hotmail.com

## Introduction

Benign prostatic hyperplasia (BPH) also known as nodular hyperplasia, benign growth of the prostate express to the increase in size of the prostate in middle aged and elderly men[1]. Lower urinary tract symptoms (LUTS) secondary to BPH are prevalent and interfere with the quality of life (QoL) of older men [2-4]. The prevalence of BPH is about 40% for men in their fifties and reaches to 90% for men in their nineties [5]. Lower urinary tract symptoms (LUTS) arise multiple domain of clinical symptoms such as post-micturition, voiding, storage and are prevalent among elder men [6]. It is known that with age the prevalence of BPH rises [7]. Without treatment, BPH can reason important complications. Acute urinary retention, urinary tract infection, and bladder calculi are typically found in these patients. The most hazardous complication of untreated BPH with LUTS is renal disorder [8].

According to observational, longitudinal, multicenter study, an important ratio (22.6%) of LUTS/BPH patients reported anxiety or depression and they also announced a 7% of variance for explaining the severity of LUTS/BPH. Likewise in a large population-based study, nearly 36% and 30% of men were found to report anxiety and depression, respectively [9]. Pre-existing study outcomes the current treatment for LUTS/BPH may not fully remedy urinary issues if the underlying psychiatric disorders are not suitably resolved [10]. Taken together, a high level of psychiatric morbidity has significant effects for the suitable management in patients with of LUTS/BPH and warrants further in-depth studies in terms of potential relationship between psychiatric symptoms and treatment response in patients with LUTS/BPH [9]. LUTS may be very uncomfortable and cause a decrease in health-related quality of life [11].

The aim of our study was to investigate the potential influences of anxiety and QoL to LUTS/BPH. Additionally psychiatric disorders identified use of brief and quick but validated rating scales suitable measurement.

## Material and Method

### Study population

We examined consecutive 42 patients admitted to our outpatient clinic with symptoms of the lower urinary tract at Bor State Hospital. The mean age of the patients was  $56 \pm 10$  years. BPH was defined according to BPH clinical study guidelines; age >50 years, International Prostate Symptom Score (IPSS)  $\geq 8$  points, prostate volume  $\geq 20$ cc, maximum urinary flow rate (Qmax)  $< 15$ mL/second (with a minimum voided volume  $\geq 130$ ml) and post-void residual volume  $< 100$ mL [12]. Also Hamilton anxiety (HAMA 14) rating scale score  $> 5$ . A widely used measure across double-blind trials of anxiety disorders including generalized anxiety disorder and panic disorder is the Hamilton Rating Scale for Anxiety [13]. There are a few exclusion criterias. The following symptoms were excluded for diagnostic stability: Hamilton anxiety rating scale score  $\leq 5$ , total prostate specific antigen (PSA) level  $> 10$ ng/mL, a history or evidence of prostate cancer in prostate biopsy, prior prostatic surgery, any causes of LUTS other than BPH (i.e., acute or chronic prostatitis, bladder neck contracture, neurogenic bladder, bladder malignancy, urethral stricture, renal failure, connective tissue diseases, and

acute or chronic urinary tract infections). The severity of LUTS is evaluated by the validated International Prostatic Symptom Score (IPSS) [14]. We examined and recorded total PSA, age, prostate volume, Qmax and IPSS also 14-item Hamilton anxiety rating scale for anxiety and IPSS QoL were utilized in the study. Patients according to IPSS were divided into two groups as moderate (group 1, IPSS  $\leq 19$ ) and severe (group 2, IPSS  $> 19$ ) LUTS. Patients according to Qmax were divided into two groups as moderate (group 3, Qmax  $> 9$ ) and severe (group 4, Qmax  $\leq 9$ ) LUTS. The study was approved by the local ethics committee of Bozok University.

### Statistical analysis

Shapiro-Wilk's and Levene's tests were used to test the normality and variance homogeneity of data. Values are expressed as frequencies and percentages, mean  $\pm$  standard deviation or median and 25th-75th percentiles. To compare parametric continuous variables, Student's t-test was used; to compare nonparametric continuous variables, the Mann-Whitney U-test was used. Categorical data were compared by Chi-square distribution. Statistical analyses were performed using the statistical package SPSS, version 15.0 (SPSS Inc., Chicago IL, USA); a value of  $p < 0.05$  was used to define statistical significance.

## Results

Baseline characteristics of patients were summarized in (Table 1). The mean age of the patients was  $56 \pm 10$  years. The mean Hamilton anxiety rating scale score of group 1 and group 2 were  $15.4 \pm 3.3$  and  $21.4 \pm 4.5$ , respectively ( $P=0.03$ ). The mean Hamilton anxiety rating scale score of group 3 and group 4 were  $13.5 \pm 2.8$  and  $17.9 \pm 3.5$ , respectively ( $P=0.04$ ). The mean QoL score of group 1 and group 2 were  $3.2 \pm 0.6$  and  $4.2 \pm 0.9$ , respectively ( $P=0.02$ ). The mean QoL score of group 3 and group 4 were  $3 \pm 0.5$  and  $3.7 \pm 0.6$ , respectively ( $P=0.02$ ) (Table 2).

Table 1. Baseline Characteristics of Patients.

Variables	Mean $\pm$ S.D.	N
Hamilton anxiety rating scale score	$16.8 \pm 3.9$	42
Quality of Life	$3.5 \pm 1.1$	42
Total prostate-specific antigen (ng/mL)	$2.6 \pm 0.3$	42
Prostate volume (mL)	$38 \pm 7.1$	42
International Prostate Symptom Score	$15.1 \pm 3.1$	42
Maximum urinary flow rate (mL/second)	$14.1 \pm 2.9$	42
Age (years)	$56 \pm 10$	42

Table 2. According to International Prostate Symptom Score (IPSS) and Maximum urinary flow rate compared Hamilton anxiety rating scale and Quality of Life.

Variables		N	Mean $\pm$ S.D.	P value
Hamilton anxiety rating scale	IPSS $\leq 19$	32	$15.4 \pm 3.3$	0.03
	IPSS $> 19$	10	$21.4 \pm 4.5$	
Hamilton anxiety rating scale	Qmax $> 9$	14	$13.5 \pm 2.8$	0.04
	Qmax $\leq 9$	27	$17.9 \pm 3.5$	
Quality of Life	IPSS $\leq 19$	32	$3.2 \pm 0.6$	0.02
	IPSS $> 19$	10	$4.2 \pm 0.9$	
Quality of Life	Qmax $> 9$	14	$3 \pm 0.5$	0.02
	Qmax $\leq 9$	27	$3.7 \pm 0.6$	

## Discussion

In this study, we found an association between anxiety and clinical status in BPH patients. In addition, we showed that LUTS is affecting QoL of patients. This finding revealed that LUTS severity is associated anxiety and QoL consisted with previous study.

LUTS which contains obstructive (voiding) symptoms and irritative (storage) symptoms can be quantitatively assessed by questionnaires like the IPSS [2-4]. In Tanik's study, Qmax and IPSS were correlated with prostate volume, which is related with the clinical status of patients [15]. The high level of psychiatric morbidity in patients with multiple LUTS has significant effects for treatment and highlights the requirement for further research to pinpoint specific mechanisms underlying this relation [9]. A widespread neurochemical underpinning may be argued to be attributable to depression/anxiety and bladder function. A compelling relationship between central and peripheral serotonin (5-HT)/norepinephrine (NE) systems and lower urinary tract function has been consistently suggested [16]. Furthermore, the decrease of 5-HT developed urinary frequency and lead to detrusor over-activity, which was successfully reversed by fluoxetine the selective serotonin reuptake inhibitor (SSRI) [17]. Differential relationship between psychiatric symptoms and LUTS were found in male patients in a prior study, where depression was more related with storage and post-micturition in male patients [9]. Preliminary results of a previous study suggest that depression, anxiety and somatization may have partially effects on the clinical manifestation of LUTS/BPH [18]. Psychological symptoms are also very prevalent in the general population and so it is not amazing that they might co-exist in patients with LUTS. Our study was determined mean Hamilton anxiety rating scale score was higher in patients with severe LUTS. This finding was demonstrated that IPSS, which is related to clinical status in BPH patients, was also associated with anxiety. Present study was detected that Hamilton anxiety rating scale score was higher in patients with lower Qmax values. Likewise, this study showed relation anxiety with LUTS and Qmax.

Depression and anxiety levels of patients with acute coronary syndrome must be certainly assessed. This will help us both to develop life quality of these patients and reduce mortality and morbidity of these patients by diagnosing depression and anxiety disorders and treating them on time [19]. The results of the Kayhan's study support that anxiety and depressive impairments are found with a high incidence in patients with respiratory disorders [20]. Previous studies have consistently informed on the negative effect of LUTS on the health-related quality of life (HRQoL) of men with BPH [21, 22]. It is believed that accomplished management of BPH is a cooperative endeavor between healthcare professionals and the patient purpose at decreasing the influence of LUTS on the HRQoL of patients with BPH[23]. Many previous studies have replicated lower QoL in patients with LUTS/BPH were major across some domains of QoL and on overall perceptions of general health status and mental health, particularly accompanied by anxiety / depression. Likewise, same in study also found an important relation of anxiety with QoL [18]. Compatible with these findings, according to our results, QoL was associated with IPSS, Qmax and clinical status of BPH patients.

The presence of anxiety and amelioration of anxiety was significantly related with the non-response in the Yang's study, demonstrating that clinicians may benefit in expectancy of future response in clinical practice if they know the level or rehabilitation of anxiety. Same study's results are in line with the prior findings that anxiety may be involved as a risk factor in the severity and progression of LUTS/BPH [9, 18, 24, 25]. In fact, depression and anxiety have been found to effect on self-perception, treatment adherence, coping strategies and clinical status in a varied mental health and physical diseases. Taken together, we might deliberately speculate that depression/anxiety and LUTS are all connected with important neurotransmitters, 5-HT and NE, and that thus these psychiatric symptoms may play a part in the development of clinical symptoms and treatment results in patients with LUTS/BPH[18].

In conclusion, we found relationship between clinical status, anxiety and QoL in patients with BPH. These psychiatric parameters may help identify individuals to benefit from treatment interventions in daily routine practice. In the current study, LUTS severity, as measured by IPSS and Qmax, significantly associated with the QoL and Hamilton anxiety rating scale score. When assessing Treatment of BPH patients, presence of anxiety and treatment of anxiety should be taken into account by physicians.

## Competing interests

The authors declare that they have no competing interests.

## References

1. Atılgan D, Yaşař A, Erdemir F, Parlaktaş BS, Uluocak N, Fırat F. Comparison the Efficacy of Four Different Alpha Blockers in the Treatment of Benign Prostatic Hyperplasia. *J Clin Anal Med* 2011;2(2):27-31.
2. Sexton CC, Coyne KS, Kopp ZS, Irwin DE, Milsom I, Aiyer LP, et al. The overlap of storage, voiding and postmicturition symptoms and implications for treatment seeking in the USA, UK and Sweden. *EpiLUTS. BJU Int* 2009;103(3):12-23.
3. Barry MJ, Cantor A, Roehrborn CG. Relationships among participant international prostate symptom score, benign prostatic hyperplasia impact index changes and global ratings of change in a trial of phytotherapy in men with lower urinary tract symptoms. *J Urol* 2013;189(3):987-92.
4. Kupelian V, McVary KT, Kaplan SA, Hall SA, Link CL, Aiyer LP, et al. Association of lower urinary tract symptoms and the metabolic syndrome: results from the Boston area community health survey. *J Urol* 2013;189(Suppl.1):S107-14.
5. Berry SJ, Isaacs JT. Comparative aspects of prostatic growth and androgen metabolism with aging in the dog versus the rat. *Endocrinology* 1984;114(2):511-20.
6. Madersbacher S, Alivizatos G, Nordling J, Sanz CR, Emberton M, de la Rosette JJ. EAU 2004 guidelines on assessment, therapy and follow-up of men with lower urinary tract symptoms suggestive of benign prostatic obstruction (BPH guidelines). *Eur Urol* 2004;46(5):547-54.
7. Gratzke C, Schlenker B, Weidlich P, Seitz M, Reich O, Stief CG. [Benign prostatic hyperplasia: background and diagnosis]. *MMW Fortschr Med* 2007;149(33-34):25-8.
8. Badia X, Garcia-Losa M, Dal-Re R, Carballido J, Serra M. Validation of a harmonized Spanish version of the IPSS: evidence of equivalence with the original American scale. *International Prostate Symptom Score. Urology* 1998;52(4):614-20.
9. Fitzpatrick JM. The natural history of benign prostatic hyperplasia. *BJU Int* 2006;97(Suppl.2):3-6;S21-2.
10. Coyne KS, Wein AJ, Tubaro A, Sexton CC, Thompson CL, Kopp ZS, et al. The burden of lower urinary tract symptoms: evaluating the effect of LUTS on health-related quality of life, anxiety and depression. *EpiLUTS. BJU Int* 2009;103(Suppl.3):S4-11.
11. Seyfried LS, Wallner LP, Sarma AV. Psychosocial predictors of lower urinary tract symptom bother in black men: the Flint Men's Health Study. *J Urol* 2009;182(3):1072-7.
12. Kunit T, Lusuardi L. An evidence-based review of NX1207 and its potential in the treatment of benign prostatic hyperplasia. *Res Rep Urol* 2014;6(6):67-70.
13. Hamilton M. The assessment of anxiety states by rating. *Br J Med Psychol* 1959;32(1):50-5.
14. Araki T, Monden K, Araki M. Comparison of 7 alpha(1)-adrenoceptor antagonists in patients with lower urinary tract symptoms associated with benign prostatic hyperplasia:a short-term crossover study. *Acta Med Okayama* 2013;67(4):245-51.
15. Tanik S, Albayrak S, Zengin K, Borekci H, Bakirtas H, Imamoglu MA, et al. Is the

- neutrophil-lymphocyte ratio an indicator of progression in patients with benign prostatic hyperplasia? *Asian Pac J Cancer Prev* 2014;15(15):6375-9.
16. Thor KB, Morgan C, Nadelhaft I, Houston M, De Groat WC. Organization of afferent and efferent pathways in the pudendal nerve of the female cat. *J Comp Neurol* 1989;288(2):263-79.
17. Lee KS, Na YG, Dean-McKinney T, Klausner AP, Tuttle JB, Steers WD. Alterations in voiding frequency and cystometry in the clomipramine induced model of endogenous depression and reversal with fluoxetine. *J Urol* 2003;170(5):2067-71.
18. Yang YJ, Koh JS, Ko HJ, Cho KJ, Kim JC, Lee SJ, et al. The influence of depression, anxiety and somatization on the clinical symptoms and treatment response in patients with symptoms of lower urinary tract symptoms suggestive of benign prostatic hyperplasia. *J Korean Med Sci* 2014;29(8):1145-51.
19. Yesilbursa D, Aydinlar A, Karaagac K, Ucar H, Akturk Y, Yetgin ZA. The Comparison of Depression and Anxiety Levels in Patients with Acute Coronary Syndrome. *J Clin Anal Med* 2014;5(5):390-3
20. Kayhan S, Akpinar A, Murat N. AnxietyAnalysis of Depression and Anxiety Levels in Patients with Dyspnea. *J Clin Anal Med* 2013;4(4):281-5
21. Eckhardt MD, van Venrooij GE, van Melick HH, Boon TA. Prevalence and bothersomeness of lower urinary tract symptoms in benign prostatic hyperplasia and their impact on well-being. *J Urol* 2001;166(2):563-8.
22. Van Dijk MM, Wijkstra H, Debruyne FM, De La Rosette JJ, Michel MC. The role of nocturia in the quality of life of men with lower urinary tract symptoms. *BJU Int* 2010;105(8):1141-6.
23. Browne JP. Health-related quality-of-life studies in urology: conceptual and methodological considerations. *World J Urol* 1999;17(4):193-8.
24. Glover L, Gannon K, McLoughlin J, Emberton M. Men's experiences of having lower urinary tract symptoms: factors relating to bother. *BJU Int* 2004;94(4):563-7.
25. Cortes E, Sahai A, Pontari M, Kelleher C. The psychology of LUTS: ICI-RS 2011. *Neurorol Urodyn* 2012;31(3):340-3

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